

## **Written evidence submitted by the Rugby Football Union**

### **RFU RESPONSE: DIGITAL, CULTURE, MEDIA AND SPORT COMMITTEE INQUIRY INTO CONCUSSION IN SPORT**

#### **ORGANISATIONAL SUMMARY**

The Rugby Football Union (RFU) is the governing body for rugby union in England. Across the country, there are four million people enjoying rugby, 500,000 regular players supported by 25,000 coaches and more than 100,000 volunteers in almost 2,000 clubs. All profit made by the RFU is invested back into the community game and the men's and women's England age grade and senior teams. This written submission details our evidence based approach to preventing and managing head injuries in the sport, and demonstrates our drive to continue learning and ensure we are providing a safe environment for all our players.

#### **RESPONSE**

Player welfare is fundamental to rugby and at the heart of the training delivered to coaches, referees and medics at all levels of the game in England. Our approach is evidence based and centred around five core themes: Surveillance, Prevention, Management, Education and Research. Ensuring we have the most up to date knowledge and using this to educate our community to prevent and manage head injuries underpins how we protect players.

We work with any organisation who can help us to improve our understanding and deliver better outcomes for our players. This involves regularly interacting with players' associations, medical experts, referees, coaches and campaign groups. HEADCASE, our concussion awareness education is a good example of working collaboratively with outside stakeholders to provide the best outcome for the rugby community and was initiated in 2013. Developed with Headway (the National Head Injuries Association, a leading and longstanding charity in this area), our HEADCASE training modules are recognised as the leading concussion awareness and education materials in the UK.

The purpose of the RFU is to grow the game, bringing rugby to as many people as possible in the safest way possible. This is because we believe the benefits of participating outweigh any risks. Research shows there are significant physical and mental health benefits to participating in sport. Additionally, an independent review of our All Schools programme by Sheffield Hallam University showed that of the students who took part in the programme, 69% were more aspirational, 69% more confident, 64% attained better at school and 63% had improved their leadership skills.

#### **SCIENCE AND RESEARCH**

As the Committee heard during its oral evidence session with scientists, the neurocognitive consequences of participation in contact sports are uncertain, nevertheless the RFU, both itself and with other stakeholders, has sought to take action to bring down the risk in the professional and community game, and to educate participants. The RFU has and will always continue to work with World Rugby and other stakeholders on research that drives forward player welfare. We have published over 40 peer-reviewed publications in this area along with over 50 abstracts and conference presentations.

The RFU has several world leading surveillance programmes in place that cover all levels of the game in England. The Professional Rugby Injury Surveillance Programme (PRISP), introduced in 2002, is an annual report that tracks injury rates in the English Premiership and the national teams, allowing analysis of trends and the effectiveness of interventions to be recorded. In 2017, the Women's Rugby Injury Surveillance Programme (WRISP) was also introduced. The Community Rugby Injury Surveillance Project (CRISP) was introduced in 2009 and collects match exposure and match injuries from adult men's community rugby clubs in England. CRISP, run in conjunction with the University of Bath, is now recognised as one of the largest and longest running community level injury surveillance studies in the world.

As with the elite game and the adult community game, age grade rugby has its own surveillance project to ensure we are gathering the necessary data to make informed decisions. The Youth Rugby Injury Surveillance Project (YRISP) collects match exposure and match injuries from schools across England at the U13, U15 and U18 age groups. The BUCS Injury Surveillance Project (BUCS ISP) was set up in 2017 and collects injury data from the BUCS Super Rugby competition, which is the highest level of university rugby in the UK and a potential pathway for university players into elite rugby. All surveillance data is published on our website [here](#).

The RFU has continued to collaborate to drive forward research in this area, including the 2008 Epidemiology of Head Injuries in the English Professional Game Study, which was the first paper to recommend a law change allowing the temporary replacement of elite players for head injury assessment. In 2016, the RFU worked with World Rugby on three video-based studies looking at risk factors for concussion which have underpinned the agenda for rugby's approach to concussion prevention. These studies informed the development of World Rugby's High Tackle Sanction Framework and the 2021 Head Contact Process which has been implemented worldwide. Research continues and demonstrates our desire to improve understanding and consequently improve player welfare. We currently have two studies under review:

1. **The Brain Study:** a two-year study funded by Drake Foundation exploring the relationship between concussion and neurocognitive function of 146 players over the age of 50. This study is currently under review with a peer-reviewed journal and will make a significant contribution to our understanding of the long-term consequences of head injuries to rugby players.
2. **Imaging Study:** funded by Drake Foundation, investigating the relationship of rugby participation and acute head injuries in professional adult male and female rugby union and league players using advanced MRI. This study is currently under review.

The 2017/19 miRNA salivary trial in the Premiership and Championship sought to contribute a better understanding of the pathophysiology of sports-related concussion and the role of MicroRNAs within this. The diagnosis of concussion is a challenge for all clinicians as there is no validated objective biomarker available to assess the presence or severity of concussion in sport. It is therefore necessary to rely on subjective measures like self-reporting of symptoms which depend on the cooperation of the player and so there would be great value in an objective biomarker to assist diagnostic and prognostic decisions. Results published this month show that the University of Birmingham-led study carried out in collaboration with the RFU, Premiership Rugby, and Marker Diagnostics has identified a method of accurately diagnosing concussion using saliva, paving the way for the first non-invasive clinical test for concussion for use in sport and other settings.

With player welfare at the heart of all we do, it is imperative that we make evidence based decisions to ensure the anticipated effect of any change is safe and improves outcomes. The 2018/19 Championship tackle height trial for example, was the first trial in the elite game to assess the effectiveness of lowering tackle height on the risk of concussion. Reducing the maximum height of the legal tackle from the line of the shoulder to the line of the armpit in elite men's rugby resulted in desired changes in player behaviour. Ball carriers entered contact partially bent and tacklers entered contact fully bent at the waist more frequently. However, overall concussion incidence did not decrease and in tacklers both concussion incidence and propensity increased significantly. A better understanding of the interaction between ball carrier and tackler behaviour is needed to inform future trials of more context specific and game-specific strategies to reduce concussion. While this study has helped to shape a future approach, its ultimately unsuccessful outcome highlights the need to take an evidence based approach and the dangers of making changes to the laws of the game without real world evaluation.

Funding of player welfare research is wide ranging and resources invested into these areas are a mixture of personnel, project and bespoke research study costs. The RFU invests around £325,000 per annum on people and project costs attributed to our injury surveillance programmes and in addition, we work with World Rugby and several external partners to deliver cutting edge research. For example, The Drake Foundation invested over £450,000 in the Brain study and The University of Birmingham/Marker made a significant investment into the miRNA study. As such, the RFU's investment in this area is consistently in the hundreds of thousands annually.

## **EDUCATION**

### Elite Game

Education is an essential component of our approach. From 2004, a head injury and concussion management module was included in the annual RFU Pre Hospital Immediate Care in Sport Programme which is a requirement for all professional game medics. Mandatory annual concussion education was introduced for all England representative teams, Premiership and Championship players, coaches and support staff in 2015 and in 2018, was extended to include all Premier 15s players. The objective of the education programme is to improve understanding of concussion and the behaviours required from all groups to manage it effectively. Should the education not be completed, we are able to remove a player's eligibility to compete.

### Community Game

The RFU introduced HEADCASE in 2013, a resource developed in consultation with Headway and leading neurologists. The campaign comprises two simple messages; 'the four Rs' (recognise, remove, recover, return) and 'if in doubt, sit them out'.

In 2014, HEADCASE online awareness modules became mandatory for all community rugby coaching, match official, safeguarding and first aid courses (attendance of around 5,000 on these award courses annually). These training modules are recognised as the leading concussion awareness and education materials in the UK. These modules are free, available to all and can be found on our website [here](#).

Additionally, concussion seminars and presentations are given to schools, parents, coaches and referees. Clubs ask all their coaches, adult players and parents to complete HEADCASE online modules annually and this can be tracked through GMS. On average,

around 20,000 people access this module annually (5,000 coaches and 15,000 members of the rugby community).

## **ELITE RUGBY**

### Head Injury Protocols

In a contact sport like rugby, even with research based education and prevention protocols in place to minimise risk, injuries will unfortunately still happen. It is imperative therefore that an appropriate evidence based management programme is implemented when head injuries do occur. In the late 1990s, World Rugby (then IRB) approved the first set of concussion Regulations, stipulating a three week minimum stand-down period for an adult before they could return to play unless cleared by a neurologist. In the two decades that have followed, we have driven continuous improvement in the management of such cases.

Today, the Head Injury Assessment (HIA) is included in the Laws of the Game, ensuring an evidence-based off-field assessment together with a temporary substitution to assess players with potential or suspected concussion in selected adult elite competitions. Assessment is based on performance on a multi-modal test compared to a baseline test conducted by each player pre-season. Since the HIA was permanently introduced in 2015, the process has 92% accuracy in diagnosing and removing players who have suffered a concussion.

Hawkeye, a real time video replay and pitch side review system, was introduced by World Rugby and the RFU in 2015 and introduced to the Premiership in the 2016/17 season. This additional technology means that at a professional rugby match today, pitch-side reviewers, the independent match day doctor, referees and team doctors all have access to real-time footage offering multiple angles along with the ability to remove a player if there are concerns.

If a player does suffer a concussion, return-to-play protocols must be adhered to and in recent years, there has been an evolution in their management. In 2011, professional rugby in England introduced the standardised six stage graduated return-to-play (GRTP) guidelines, with each stage lasting a minimum of 24 hours meaning that the minimum return-to-play time is six days. It has been suggested that the shift from the process previously set out in World Rugby Regulation 10 (a three week stand-down from training and playing unless cleared by a neurological specialist at any point prior) to the GRTP guidelines was a cause for concern. We do not believe that this should be a cause for concern and in fact was a positive development. Under Regulation 10, players could return at any point if cleared by any neurological specialist. Under the GRTP guidelines, all players must complete the six stages ensuring consistency in the care players receive.

This improvement in the treatment of players because of this change is reflected in our recorded data. Prior to 2011, 27% of players returned to play within six days but no player has returned in under six days since the 2014/15 season. Data collected via PRISP and WRISP shows the mean absence for men's and women's players is 16-17 days.

### Player Load

The Professional Game Agreement between the RFU and Premiership Clubs provides several safeguards for player welfare, including limits on the number of matches and the number of minutes played by a player. In addition, we work hard to educate players and coaches around the risk of player load and the need for greater squad rotation along with more shared game time. This has led to a reduction in the number of matches played by

Premiership players. For the England team elite playing squad the number of players playing more than 31 games dropped from 13 in 2016/17 to 1 in 2019/20 with the average number of club games played dropped from 19.7 to 15.9.

Furthermore, the RFU is currently in the planning phase of a trial to use high-tech chipped mouth guards to measure player head and body impact load in collaboration with a wider World Rugby trial. Once finalised, we will be able to share more details of this trial. Results will hopefully guide us in what actions we can take to reduce head impacts and concussions both in playing and training.

## **COMMUNITY AND AGE GRADE RUGBY**

With the CRISP and YRISP surveillance programmes, HEADCASE education and ongoing research as detailed earlier in this submission facilitating continued improvement in player welfare outcomes, the RFU provides science based prevention and management protocols to ensure a well-rounded approach.

In 2017 the Activate Injury Prevention Programme was embedded in the community game coach education curriculum. Activate is an injury prevention exercise programme that can be integrated into training and pre-match sessions. Exercises are designed to improve functional and core strength, balance and agility, helping players with the game's physical demands.

A three-year study on schoolboy injuries involving 40 schools and nearly 2,500 players aged 14-18 found that overall injuries fell by 72% when players completed the programme at least three times a week with concussion injuries reduced by 59%. In the same study in adult males, there was a 59% reduction in concussion and 40% reduction in lower limb injury.

There is no Head Injury Assessment (HIA) process in the community game and therefore activities must adhere to RFU Regulation 9, which states "any individual who exhibits any of the signs or symptoms of concussion should be immediately and permanently removed safely from the field of play, should not return to play that day, and it is recommended that they are referred to a medical or healthcare professional for assessment and advice." This must be adhered to irrespective of the qualification/profession of the individual providing the pitch-side first aid and/or immediate care provision.

The Adult Community Management Guidelines and The Age Grade Management Guidelines provide information on how to recognise a suspected concussion and manage the return to play appropriately centred around five principles:

1. Concussion must be taken extremely seriously to safeguard the safety and long term health of players.
2. Players suspected of having concussion must be removed from play and must not resume play in the same match.
3. All players suspected of having concussion should be medically assessed.
4. Players suspected of having concussion or diagnosed with concussion must go through a Graduated Return to Play protocol (GRTP).
5. Players should be reviewed by a health care professional before returning to play.

The GRTP protocols in both the adult community and age grade game is a six stage process with no return to play in less than 19 days for adult players and 23 days at the earliest for U19s. In both protocols, there is a minimum 14 day rest period from which a player can only proceed to the next stage (light aerobic exercise) if they are symptom free. Further details on each stage can be found [here](#).

In age grade rugby, the protocol includes full co-operation with both the player and their parent/s/guardian. After a concussion the brain needs to rest, so initially the player must rest from all physical and brain activities. Collaboration with the player's school/college facilitates a managed and gradual return to full academic studies alongside a return to play.

World Rugby has intentionally built flexibility into rugby's laws and the RFU has utilised this flexibility to take steps to further protect player welfare. A good example of this is the Age Grade Rugby Framework which was developed from scientific research, providing a structured approach to coaching the game from U7s to U18s with contact introduced gradually.

No contact is introduced until the U9 age grade, where only the tackle is introduced. At this age, a tackle must be below the armpit, and a tackle is also completed if a player is held on his feet for three seconds. At U10s, the player must be tackled to the ground but tackle height rules remain. Three player uncontested scrums are introduced at U10s with a phased approach to eight person contested scrums at U14s. Uncontested lineouts are introduced at U14s with contested lineouts including lifting introduced at U16s. The duration of matches and amount of rugby allowed to be played in a day also increases with age. The full progression can be found [here](#).

The RFU recommends that all clubs have at least one first aider per team and to support this, the RFU runs its own first aid course for rugby clubs and schools, which is a nationally recognised qualification. There must be access to a telephone to ensure that the emergency services can be contacted immediately when needed and clear vehicular access for an ambulance or other emergency vehicle must be available.

## **ASKS OF GOVERNMENT**

The welfare of all those involved in our game is paramount and we continue to drive forward scientific research and ensure our protocols reflect the very best evidence available. The care and focus on concussion education, recognition and management for players is the best that it has ever been, and we will continue to use evidence and research to keep improving. Player welfare is our top priority, and we welcome all constructive opinions regarding the safety, shape or attractiveness of the game.

In addition to the work we do as a sport, there is certainly benefit to be gained by Government working collaboratively across the sector and more widely. Three key areas include:

1. Supporting collaborative research across all sectors, not only sport, to evaluate and improve practical assessment tools, develop objective diagnostic markers and gain a deeper understanding of the recovery process and long-term risks of sport-related concussion and concussion in general. The more knowledge we have, the better we are able to support our players and the more collaboratively we approach the issue, the more data we have to work with.
2. Working in partnership to implement an enhanced education campaign in schools to improve awareness and understanding of brain health with the support of government departments (Department of Health and Social Care and Department for Education). The RFU works hard to educate all those involved in rugby provision that brain health is an issue which affects all sports, but is also a wider societal issue and must be treated as such. An education campaign across education, health and sport could be instrumental in improving outcomes and is something we would be eager to work with Government on.

3. Sport, government and professional clinical bodies must work collaboratively to improve health professionals' knowledge of concussion management (both in hospitals and GPs). Again, this speaks to the need for a widening of the approach to ensure consistency of knowledge and standards of practice across not just sport, but the health service as a whole.

The Committee received a range of opinions setting out the challenges of the uncertainty of the scientific position regarding the causes of dementia, and in particular Professor Ritchie informed the Committee at the first session, “the biggest challenge is defining the difference between, association between, an injury and a clinical symptom and a causal relationship between an event and cognitive symptoms.”<sup>1</sup> Further as 60 medical practitioners/researchers noted in a letter published in the *Lancet*: “Unfortunately, the uncertainties around the clinical syndrome and the pathological definition of CTE are not acknowledged adequately in much of the current research literature or related media reporting, which at times has resembled science by press conference. Too often an inaccurate impression is portrayed that CTE is clinically defined, its prevalence is high, and pathology evaluation is a simple positive or a negative decision. This distorted reporting on CTE might have dire consequences. Specifically, individuals with potentially treatable conditions, such as depression or post-traumatic stress disorder, might make decisions on their future on the basis of a misplaced belief that their symptoms inevitably herald an untreatable, degenerative brain disease culminating in dementia”.<sup>2</sup> It is therefore vital that not only co-ordinated strategic research continues to be undertaken, but Government can play an important role in maintaining an informed and rigorous public conversation on brain health.

Player welfare will remain at the heart of all we do. As a national governing body, our very purpose is to ensure rugby is available to all and as such is available to the highest standards and in the safest environment possible. Not only do we continue to strive for better, but we remain ready to listen and collaborate, and would encourage Government to work with us to build a cross sector approach to ensure consistency and the highest standards possible when it comes to brain health.

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<sup>1</sup> Digital, Culture, Media and Sport Committee, *Concussion in Sport, HC 1177*, March 2021

<sup>2</sup> Dr William Stewart et al, *Primum non nocere: a call for balance when reporting on CTE*, March 2019